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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,376	08/26/2003	Yoshikazu Miyajima	00862.023098	2042

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

GUTIERREZ, KEVIN C

ART UNIT PAPER NUMBER

2851

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/647,376	Applicant(s) MIYAJIMA, YOSHIKAZU	
	Examiner Kevin Gutierrez	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>October 12, 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

- I. Species I - Figure 6
- II. Species II - Figure 7
- III. Species III - Figure 8
- IV. Species IV - Figure 9

2. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. During a telephone conversation with Justin Oliver on September 1, 2005 a provisional election was made with traverse to prosecute the invention of Species II, figure 7, claims 1-12 and 14-16. Affirmation of this election must be made by applicant in replying to this Office action. Claim 13 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

4. Claims 5 and 12 are objected to because of the following informalities:

a. Claim 5, page 3, line 2 - "...is separated for the reflection surface..." It appears that the underlined text should be --from--.

b. Claim 12, page 4, last line - "...radiation plate in a predetermined positon to said mirror." The underlined text seems to contain a typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 16 provides for the use of the exposure apparatus according to claim 14, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 16 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-8 and 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Goldstein (US 2003/0169520).

Regarding claim 1, Goldstein discloses

- “a mirror (100) having a reflection surface (102) that reflects said exposure light ([0013], lines 2-3);
- a radiation plate (225; cooling/heating elements) for radiation-cooling, provided away from an outer surface of said mirror ([0018], line 3), that ensures a passage area for said exposure light incident on and reflected from said reflection surface (incident and reflected light is allowable due to the rear location of 225); and
- a temperature control mechanism for temperature control of said radiation plate ([0017]).”

Regarding claim 2, Goldstein discloses “wherein temperature of said radiation plate is controlled based on detection information from temperature detection means (302; temperature sensors) installed at said mirror ([0020], lines 4-6).”

Regarding claim 3, Goldstein discloses “wherein said radiation plate is separated and provided in plural positions ([0023], lines 4-6).”

Regarding claim 4, Goldstein discloses “wherein said passage area is formed between said separated plural radiation plates ([0016], lines 1-6).”

Regarding claim 5, Goldstein discloses “wherein said radiation plate (225) is separated for the reflection surface (210) of said mirror (100) and an outer surface other than said reflection surface (225 is located beneath the surface of the mirror).”

Regarding claim 6, Goldstein discloses “wherein said separated plural radiation plates respectively have a form along a form of the outer surface of said mirror, and provided in positions away from said mirror by an approximately predetermined distance ([0020], lines 4-6 and [0016], lines 1-6).”

Regarding claim 7, Goldstein discloses “wherein said temperature control mechanism individually performs temperature control on said separated plural radiation plates ([0024], lines 1-5).”

Regarding claim 8, Goldstein discloses “wherein said temperature control mechanism performs temperature control of said radiation plate by circulating cooling liquid or cooling gas ([0024], lines 7-10).”

Regarding claims 14 and 15, Goldstein discloses “an exposure apparatus for transferring a pattern on an original plate onto a wafer by guiding exposure light by a reflection optical system, wherein a reflection mirror provided in said reflection optical system comprises the reflection mirror apparatus according to claim 1

([[0001], lines 1-3 and [0012]; the reflection optical system is utilized to compensate any for heating issues of an imaging system).”

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Jurca (6,118,527).

Regarding claim 9, Goldstein discloses “wherein said temperature control mechanism includes:

- a first thermometer (302) that measures a temperature of said mirror (100);
 - light amount estimation means for estimating an amount of the exposure light incident on said mirror based on light emission control information for said exposure light ([0027]; the matrix of temperatures creates a temperature map of the mirror); and
 - a temperature controller that controls the temperature of said cooling liquid or cooling gas based on temperature information obtained by said first thermometer ([0024], lines 7-10)”;
- and

“the amount of the exposure light estimated by light amount estimation means ([0028]; correction of temperatures are implemented through a contour map).”

Goldstein does not disclose “a second thermometer that measures a temperature of said cooling liquid or cooling gas” and a temperature controller that controls the temperature of said cooling liquid or cooling gas based on the elements mentioned above and further based on temperature information provided by the second thermometer.

However, having “a second thermometer that measures a temperature of said cooling liquid or cooling gas” is known to the art as it is evident by the teaching of Jurca (col. 4, lines 26-29). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify Goldstein by including information provided by a second thermometer that measures the temperature of said cooling liquid or gas for at least the purpose of monitoring the temperature variations within the optical system.

Regarding claim 10, Goldstein further discloses “wherein said first thermometer is a radiation thermometer ([0022], lines 4-6) provided away from said mirror by a predetermined distance ([0020], lines 4-6).”

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Eitel et al (4,844,603).

Goldstein discloses a temperature control mechanism, a radiation plate, and a liquid to flow to control temperature of said radiation plate. Goldstein does not disclose “a solid cooling element attached to said radiation plate; and a circulation mechanism that circulates cooling liquid or cooling gas so as to cool said solid cooling element.”

However, it having “a solid cooling element attached to said radiation plate; and a circulation mechanism that circulates cooling liquid or cooling gas so as to cool said solid cooling element” is known to the art as it is evident by the teaching of Eitel et al (col.4, lines 20-25 and 27-29). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the temperature control mechanism of Goldstein by having a cooling element attached to the radiation plate with a circulation mechanism for the fluid to flow for at least the purpose to efficiently remove the absorbed heat.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Taniguchi (US 2001/0048514).

Goldstein discloses a mirror and a radiation plate. Goldstein does not disclose

- “a mirror barrel that accommodates said mirror;
- a mirror support member, fixed to said mirror barrel, that holds said mirror in a predetermined position in said mirror barrel;
- and a radiation plate support member, fixed to said mirror barrel, that holds said radiation plate in a predetermined position to said mirror.”

However, having “a mirror barrel that accommodates said mirror; a mirror support member, fixed to said mirror barrel, that holds said mirror in a predetermined position in said mirror barrel; and a radiation plate support member, fixed to said mirror barrel, that holds said radiation plate in a predetermined position to said mirror” is known to the art as it is evident by the teaching of Taniguchi ([0057], lines 3-6, where Taniguchi teaches a lens group used in a mirror barrel).” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the mirror of Goldstein by including a mirror barrel with a radiation plate support member fixed to the mirror barrel. The ordinary artisan would have been motivated to modify Goldstein in a manner described above for at least the purpose to reduce vibrations throughout the optical system.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art discloses an apparatus that compensates for the temperature variations of an optical element: Carlson (4,253,739), Kreikebaum (6,891,494,), Niibe et al (5,390,228), Aldrich et al (4,674,848), Schuster et al (6,504,597) and Eng et al (4,743,104).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-

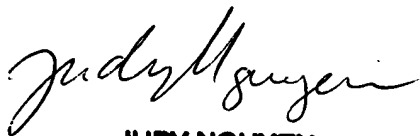
5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Gutierrez
Examiner
Art Unit 2851

September 13, 2005


JUDY NGUYEN
SUPERVISORY PATENT EXAMINER